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THE APHID OF CHOKE CHERRY AND GRAIN.

CONTENTS

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† In collaboration with U. S. Department of Agriculture.

BULLETIN 267

THE APHID OF CHOKE CHERRY AND GRAIN.[1]

Aphis pseudoavenae sp. n.

EDITH M. PATCH.

Late in June, 1917, a group of choke cherries on the campus of the University of Maine were found to be heavily infested with a species of aphid which I had not previously taken, although specimens of the same thing were brought me from Fort Kent, Maine, July 6, 1916 where they were found by Professor C. L. Metcalf while collecting syrphids.

Mounted specimens of this aphid would be most likely to be determined as *Aphis avenae* (i. e. of American authors) because of the constriction before the flange of the cornicle, the arrangement of the sensoria of the antennae, and the rather long, pointed stigma and the noticeably short second branch of M in the wing.

However, the fresh colonies crowded close along the stem and ventral leaf would suggest at once the *Aphis rumicis* group on acount of the conspicuous areas of wax powder, and could not be mistaken for *avenae* in life.

DESCRIPTION FROM LIFE.

SPRING CHOKE CHERRY GENERATIONS.

Apterous viviparous female: A rather old individual had body dark olive green irregularly mottled with still darker. Areas of powder especially noticeable in lateral rows of spots on abdomen, one on each side of segments just dorsad of prominent lateral crease, and over the tip of the abdomen caudad cornicles. These white areas are conspicuous on undisturbed colony but the powder is soon shaken off from collected material and then the aphids show only a general rather slight pulverul-

[1]Papers from the Maine Agricultural Experiment Station: Entomology No. 95.

ency. There is a deep purplish area (internal) at the base of each cornicle. Tibiae and base of antennae pale, cauda and cornicles black. Cornicles with constriction before flange with perhaps a suggestion of constriction at middle. Beak short, scarcely reaching second coxae.

Alate viviparous female: Head and thoracic lobes glistening black, general body color dark olive green. Breastplate, anal plate, cauda and cornicles black. Cornicles constricted before flange and tendency toward a very slight midconstriction. There are three large, heavy, black spots along lateral line of abdomen cephalad the cornicles, and an irregular black patch at base of cornicle, caudad. The second branch of M is typically near margin of the wing, though there is considerable variation in the length of this branch. The shape and length of stigma is variable but it is always pointed and rather elongate. The relative length of the antennal segments and the number of sensoria are also unstable factors. The drawings show what is a good average. Sensoria are always present on III (25 more or less), and IV (10 more or less) and usually on V (a few). The beak reaches about half way between first and second coxae.

Spring nymph developing to alate female: The newly dropped or newly molted nymph is yellowish or pale brown, with rusty area (internal) at base of cornicle. The nymph soon colors to dark olive green.

INSTAR	ANTENNA	BEAK
1st.	4-segmented	just caudad 3rd coxae
2nd.	5-segmented	reaches 3rd coxae
3rd.	6-segmented	2nd coxae or beyond
4th. (pupae)	6-segmented	not reaching 2nd coxae.

In the pupal instar this nymph is dark olive green, with five lateral powder spots on each side of abdomen cephalad cornicles and a solid powder area caudad the cornicles. Powder spots are present on base of head and on prothorax. There is a dark rusty area at base of cornicle due to internal substance showing through the body wall. Cauda is pale at base with black tip, and the cornicles are black.

GRAIN GENERATIONS.

Apterous viviparous female. Unlike their choke cherry progenitors, the summer colonies do not share pulverulency in any instar. In general body color they are soft dark green, dull amber greenish, to very pale greenish; always unmarked by any darker green streaks and always with strong rusty space at base of cornicles and often connecting them, a color being due to internal structure showing through the body wall.

Alate viviparous female. The laboratory bred specimens had olive green abdomens with black lateral spots, a black patch at caudal base of cornicle and some black median dashes caudad the cornicles.

SUMMER FOOD PLANTS.

Migration tests were made by placing the winged June forms on various grasses. The progency of the migrants accepted the following: Timothy, Kentucky bluegrass, sheep fesque, meadow fesque, red top, barley and oats. The test was continued through one generation only, except with the oats which was used during the summer for the material under observation.

LIFE CYCLE.

No data are yet available for the stem female as the first choke cherry collection was made June 25. At this time both apterous and alate viviparous females were present, the latter being recently developed as was evidenced by the abundance of individuals in the pupal instar.

The migrants were already taking wing on June 25th and the process continued for a week or so longer.

No collections were taken in the field in the summer here but in the laboratory material continued to live on oats until about the first of September, the colony dying out at that time partly from unknown causes.

DISCUSSION OF NAME.

Whatever the ultimate fate of the name proposed for this species may be, there seems to be no safely established American

aphid to which to refer it. It is not the *avenae* of American authors which has well defined characteristic dark green longitudinal streaks entirely absent in *pseudoavenae*. It is not the *avenae* of Theobald (Canadian Entomologist, 1916 p. 235). It is not the *padi* described and figured by Koch and Buckton. Is it the *padi* of Van der Goot (1915 p. 241)? Possibly, "in part", though it is certainly not in accord with his collection from *Mespilus* and *Pirus malus*.

No such aphid has previously been recorded on its spring host in this country as it is none of the species listed from choke cherry.

That it has been taken on grain and confused with the apple grain aphid, the so called *"avenae"* of American authors seems not improbable as these two species are so much alike in structural characters that they would be distinguished with difficulty from mounted material. In life, however, they are readily separable especially in the spring generations with a simple hand lens, the characteristic dark green longitudinal lines of our so called *"avenae"* being entirely absent from all generations of *pseudoavenae* and the powder areas of the spring generations of *pseudoavenae* being particularly noticeable. Both species have a rusty internal area near the bases of the cornicles.

To designate this aphid as a new species seems the only way to preserve its life cycle from confusion at present.

FIG. 32. THREE GRAIN APHIDS OF MAINE.

19–04. Antennal segments II to VI, tarsus, and cornicle of the spring migrant of an apple-grain aphid. Note relative length of cornicle and antennal segment VI.
33–12. Antennal segments II to VI, tarsus, and cornicle of the spring migrant of a hawthorn-grain aphid.
35–17. Antennal segments II to VI, tarsus, and cornicle of the spring migrant of a choke cherry-grain aphid. Note length of antennal segment IV, and the length of tarsus in relation to cornicle. 35A 17. Antenna and cornicle of an alate summer female of the foregoing on grain.

Too much emphasis should not be placed on the relative number of sensoria on segments III, IV and V as these are somewhat variable in all three species. The sensoria of the choke cherry-grain aphid, however, are consistently smaller than those of the other two species. All drawings are made to the same scale.